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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,202	02/11/2004	Dolf Landheer	15996-US-CONT	1640
23553	7590	12/01/2004	EXAMINER	
MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA			HU, SHOUXIANG	
			ART UNIT	PAPER NUMBER
			2811	
DATE MAILED: 12/01/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,202

Applicant(s)

LANDHEER ET AL.

Examiner

Shouxiang Hu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 19-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2004-04-29
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-10 and 19-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 20040913.

Specification

2. The disclosure is objected to because of the following informalities/defects:

In Section 0035, the term of "A" for a noble gas should read as: --Ar--

Appropriate correction is required.

Claim Objections

3. Claims 13, 16 and 17 are objected to because of the following informalities and/or defects:

Claim 13 recites subject matters of non-Gd rare-earth atoms that are unreadable on the elected species.

Claims 16 and 17 recite respectively the limitations of "an inert gas such as N₂" and "a noble gas such as A(Ar), Ne, Kr or Xe", but respectively fail to define whether the inert gas has to include N₂ and whether the noble gas has to include A(Ar), Ne, Kr or Xe.

In addition, in claim 17, the term of "A" should read as: --Ar--.

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Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11-14 and 16-18, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(e) as anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wilk (US 6,291,283; of record).

Wilk discloses method of producing a capacitive structure used in a field effect transistor (FET) employed within a semiconductor integrated circuit (See Figs. 1-2c; also see col. 3, lines 57-61), comprising: providing a semiconductor substrate (202) having a surface; forming a gate dielectric of a metal silicate (208) which can be inherently expressed by a formula MSi_xO_y , with x being 1 and the M being a transition metal element including a rare-earth element such as La, Sc, or Ce; and annealing the resulting rare-earth containing layer (see col. 4, lines 34-37).

Regarding claim 12, the dielectric layer in Wilk is formed through PVD or CVD (see col. 3, lines 60-67), which naturally involves a simultaneous flux of molecules containing the above rare-earth atoms, silicon atoms and oxygen atoms.

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Regarding claims 13 and 14, it is noted that Gd is naturally included in the group transition elements. Or, in the alternative, under 35 U.S.C. 103(a), it is obvious over Wilk, since Wilk does teaches that the metal element is preferred to be a transition metal element and that the preferred transition metal elements include the rare-earth element of La, Sc, or Ce. And, one of ordinary skill in the art would readily recognize that Gd is an art-known transition metal element; that Gd is also an art-known element within the fourteen La-series elements; and that the fourteen La-series elements normally have substantially similar properties, and a compound can normally remain substantially same properties when one La-series element in it is replaced with another La-series element. Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make the metal-silicate gate dielectric layer of Wilk with Gd or other La-series elements being used as the transition metal element in the transition metal silicate of MSi_xO_y , so that a gate dielectric layer having similar properties would be obtained with improved material choice or flexibility.

Regarding claims 16 and 17, the annealing of Wilk can be performed in N₂ and/or Ar (also see col. 5, lines 1-4).

Regarding claim 18, the method of Wilk further comprises a step of cleaning (see col. 3, lines 43-51).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilk (US 6,291,283).

The disclosure of Wilk is discussed as applied to claims 1-14 and 16-18 above.

Wilk further teaches that the annealing can be performed in N₂ and/or Ar (see cols. 4 and 5). Although Wilk does not expressly disclose that such annealing can also be performed in vacuum, one of ordinary skill in the art would readily recognize that vacuum annealing is also one of the art-known common annealing environments for forming a desired material with reduced contamination.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the art-known vacuum annealing into the method of Wilk, so that a method for forming a high quality metal silicate dielectric layer with reduced contamination would be obtained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

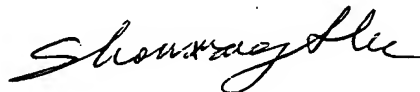
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH

November 26, 2004

A handwritten signature in black ink, appearing to read "Shouxiang Hu", written in a cursive style.

**SHOUXIANG HU
PRIMARY EXAMINER**